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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,928

01/20/2006

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EXAMINER

DUONG, DIEU HIEN

ART UNIT

PAPER NUMBER

2821

MAIL DATE

DELIVERY MODE

07/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,928	Applicant(s) BOYLE, KEVIN R.	
	Examiner DIEU HIEN T. DUONG	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-11, 14 and 16-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 14 and 16-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is a response to applicant's amendment filed 05/18/2009. In virtue of this amendment, claims 5, 12-13 and 15 are canceled; thus, claims 1-4, 6-11, 14 and 16-24 are currently in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-11, 14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kushihi (US 2002/0044092 A1 of record) in view of Koskiniemi et al. (US 6,882,317 B2).

Regarding claims 1-2, 9, 11 and 17-18, Kushihi discloses, in Figures 1, 15 and par. 0045, a planar antenna assembly for use in two different frequency bands, the planar antenna assembly comprising

- a printed circuit board (52, Fig. 15) having rf circuitry thereon (25, Figure 1);
- a patch antenna (1, Fig. 15 and 2, Fig. 1) spaced from a ground plane, the patch antenna (2) not having any slot;
- a feed (3) for coupling the patch antenna (2) to the rf circuitry (25, Figure 1), the feed comprising components (22, 23) that are physically attached to a main surface of the patch antenna (2), the components (22, 23) for reactively tuning the patch antenna (2) by tuning a first frequency inductively and a second frequency capacitively, the first

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frequency being lower than the second frequency; and a shorting tab (4) electrically connected between the ground plane and the patch antenna, wherein the shorting tab (4) electrically connects to the patch antenna (2) adjacent to a connection point of the feed, the shorting tab (2) performing an impedance transformation; wherein the components (22, 23) comprise a series connected, parallel L-C network.

Kushihi does not disclose the printed circuit board having a ground plane.

Koskiniemi discloses, in Figure 6, the printed circuit board (605) having a ground plane (GND).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the printed circuit board of Kushihi with the printed circuit board having the ground plane as taught by Koskiniemi, doing so would improved radiation efficiency of the antenna.

Regarding claims 3 and 7, Kushihi/ Koskiniemi discloses, (Kushihi, Figures 1, 4A, 7A, 15, par. 0045; Koskiniemi, Figure 6), a communications apparatus comprising a housing (51, Figure 15);

a printed circuit board (PCB) (52) within the housing (51), the printed circuit board (52) having a ground plane (Koskiniemi, Figure 6) and rf circuitry disposed thereon;

a planar antenna (1, Figure 15; 2, Figure 4A) within the housing spaced from the ground plane, the planar antenna (2) not having any slot;

a dielectric (Koskiniemi, Figure 6) between the PCB (605) and the planar antenna (611); and

a feed (3) coupling the planar antenna (2) to the rf circuitry (25), the feed comprising components (22, 23, Figure 1) that are physically attached to a main surface of the planar antenna (2), the components (22, 23) for reactively tuning the planar antenna by tuning a first frequency inductively and a second frequency capacitively, the first frequency being lower than the second frequency; and

a shorting tab (4) electrically connected between the ground plane and the planar antenna, wherein the shorting tab electrically connects to the planar antenna adjacent to a connection point of the feed, the shorting tab performing an impedance transformation;

wherein the components (22, 23) comprise a series connected, parallel L-C network.

Regarding claims 4 and 10, Kushihi/Koskiniemi disclose, (Kushihi, Figures 1 and 15), wherein the components (22, 23) are located adjacent the dielectric.

Regarding claims 6 and 8, as applied to claim 3, Kushihi/Koskiniemi discloses, (Kushihi, Figures 1, 4A, 15), wherein the planar antenna is a planar inverted-L antenna (PILA); wherein the components (22, 23) comprise a transmission line.

Regarding claims 14 and 16, Kushihi/Koskiniemi disclose, (Koskiniemi, Figure 6), wherein the dielectric is air.

Regarding claims 19-22, Kushihi/Koskiniemi disclose, (Kushihi, Figures 1; Koskiniemi, 617, 602, Figure 6), herein the components (Kushihi, 22, 23, Figure 1; Koskiniemi, 617, 602, Figure 6) are physically located between the patch antenna (611) and the ground plane (GRN).

Regarding claims 23-24, Kushihi/Koskiniemi disclose, (Koskiniemi, Figure 6), wherein the components (617, 602) are surrounded by the dielectric.

Response to Arguments

4. Applicant's arguments with respect to claims 1-4, 6-11, 14 and 16-24 have been considered but are moot in view of the new ground(s) of rejection.

Note: applicant's argument filed 02/06/2009 argues that Kushihi fails to disclose that the components "are physically attached to a main surface of the patch antenna." However, examiner respectfully disagrees. Kushihi clearly discloses in Figure 1 the components (22, 23) are physically attached to a main surface of the patch antenna (2). The components are not disposed on the main surface of the patch antenna but they are physically attached to the main surface of the patch antenna.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIEU HIEN T. DUONG whose telephone number is (571)272-8980. The examiner can normally be reached on Monday - Friday, from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Trinh Vo Dinh/

Primary Examiner, Art Unit 2821